June 22, 1955

Dr. M. L. Minsky
Harvard University
Cambridge, Mass.

Dear Dr, Minsky:

I was very happy to have had the opportunity to talk with you last week. If you have occasion to visit Madison at any time, I hope you will try to look us up at the lab or at home.

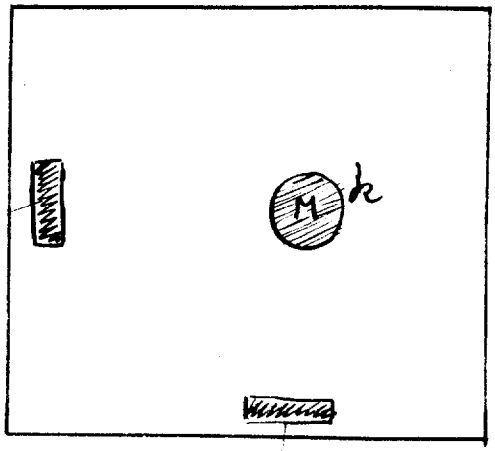
You may recall our discussion about variable resistance controls for a magnetic or a thermal micromanipulator. When I saw the Am. Opt. Co. machine at Woods Hole last summer, it occurred to me that one ought to use a plate of moderately resistant material (carbon), bordered by a conducting bar, and move the stylus along it to resolve motion into the two components of the horizontal plane in terms of the relative resistances. The vertical component could be controlled by a sliding pencil. I had not thought of combining such a control with so simple an electromagnetic transducer as a speaker; I am sure many people have casually thought of a magnetic control without solving the problem of how to mount it! At any rate, I think the plate arrangement would be more practical, especially for moderate voltages, than the electrolyte tank—whatever advantage there might be in having a direct 3-dimensional resolution is, I think, lost as soon as one has to solve the problem of maintaining stable positions.

If you can send us your working model, I will be very happy to have a chance to try it in practice. For positioning the controls (as well as rough-positioning the receiver) it may be advantageous to use the sliding magnet principle itself.

Yours sincerely,

Joshua Lederberg
Professor of Genetics

Model



semi-conductor plane.

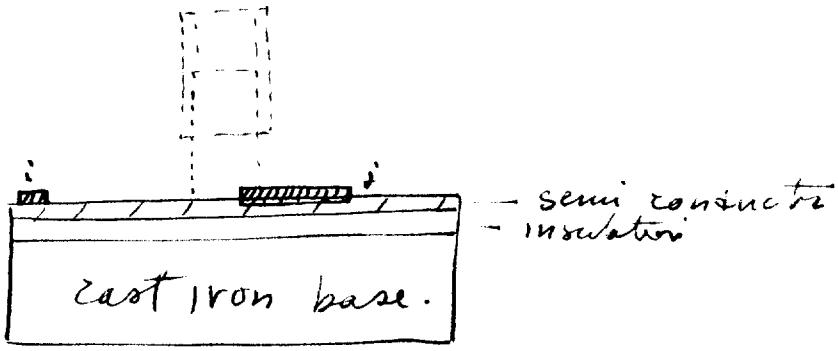
M = magnet

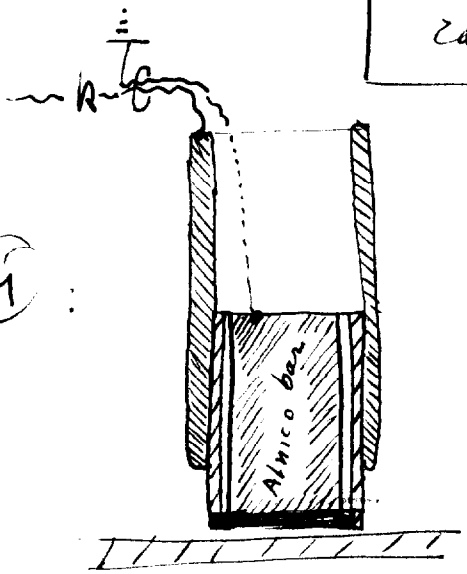
Plan

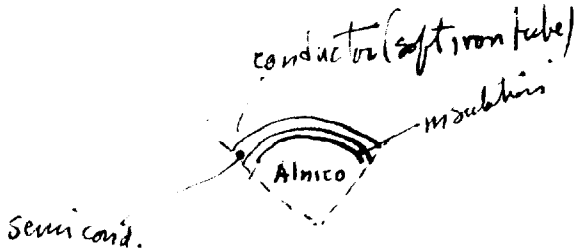
cond. i

cond. j

i k.
j







magnetiz.